

III. SURFACE WATER ASSESSMENT

B. Plan for Achieving Comprehensive Assessments

EPA has recently established a long-term goal of comprehensively characterizing waters of each state using a variety of techniques targeted to the condition of, and goals for, the waters. Achieving this goal will mean a significant increase in the percentage of waters assessed throughout the Nation. To help ensure national progress toward this goal, States have been asked to include in the 305(b) Report an outline of a plan showing how they will achieve comprehensive monitoring and assessment of its waters.

The Department of Environmental Management's Office of Water Resources (OWR) has committed to the development of a watershed approach that will ultimately guide OWR with respect to future work to abate surface water pollution. However, a 1997 OWR assessment of state water resource protection programs identified gaps in baseline monitoring, inadequate data management and limitations in the assessment program as significant deficiencies which prevent the effective statewide application of the watershed-based approach and achievement of comprehensive assessments. Emerging issues such as the cumulative effect of nonpoint pollution sources, habitat degradation, and TMDL development can not be properly addressed without an adequate ambient monitoring and assessment framework that includes an effective data management system.

RI's situation with data gaps and inefficient data management is typical of many states' water resource programs. The 1996 305(b) Report indicated a significant portion of the state's waters are categorized as either "unassessed" due to a complete lack of data, and/or "evaluated" due to old or limited data availability. The 1996 assessments of water quality were done largely by hand with no centralized database for water quality data and no means to produce maps of the information.

Recognizing inadequate data management as an inefficiency and obstacle to improved performance, reporting capabilities and comprehensive assessments, OWR, with assistance from EPA, has completed a number of key steps, outlined below, to improve data management capabilities and thus facilitate the comprehensive assessment goals.

- OWR staff designed and constructed a water quality database (using Microsoft Access software) into which water quality data from various sources is compiled and evaluated. This system was designed to be compatible with STORET, which had not been released at the time the Access database was developed.
- A Microsoft Access version of the Water Body System (WBS) program has been designed and constructed by OWR staff. Assessment forms, for use during the assessment process and to document decisions, have been developed. While hard copies of the individual waterbody assessments are available in separate files, an electronic version of the assessments are now available to the entire OWR staff by accessing the Microsoft Access WBS program. This Access WBS program is also linked to the water quality Access database noted above.
- Rhode Island waterbodies have been re-delineated with new waterbody identification numbers to allow OWR assessments to apply to individual, or segments of, rivers, lakes and estuarine waters as opposed to the previous larger subbasin delineations. The new delineation is at a 1:24,000 scale.

- OWR staff have indexed, or georeferenced, the waters of the state at a scale of 1:24,000, into a GIS data coverage. This georeferenced coverage of the new waterbody delineations allows for graphical presentation of the spatial extent of the water quality assessments.
- Refinement of the state's total waters estimates for rivers, lakes, and estuarine waters all at a 1:24,000 scale has been completed using ARC/INFO/GIS. The improvement in accuracy of these estimates at a consistent scale will allow for more precise estimates of the conditions of Rhode Island's water resources.

These data management improvements have substantially facilitated the 305(b) assessment process and allowed for easier identification of ambient monitoring gaps and improved assessment and mapping capabilities. In working towards Comprehensive Assessment, OWR, with EPA support, has committed Federal funds to begin addressing data gaps. In order to determine the most strategic use of these funds OWR is undertaking to update and revise its overall monitoring strategy. Preliminary steps taken toward addressing data gaps have included establishment of longer term contracts with groups involved in conducting baseline monitoring to ensure collection of continuous data sets. Furthermore, funds have been reserved to expand and supplement these contracts as additional monitoring sites and parameters are identified.

OWR has identified data gaps through an evaluation of the enhanced 1998 water quality assessments. Refinement of total waters values has led to more accurate estimates of unassessed waters. Development of the Access version of WBS, and indexing of the waterbodies, now allows for an easy listing and mapping of waters within the database which are completely unassessed or unassessed for various uses. The databases and mapping capabilities have also been useful in identifying areas where monitoring for various parameters (toxics, organics, pathogens, etc.) is lacking. Other areas which will be scrutinized for improved monitoring needs are the evaluated assessments. These assessments are based on either old or minimal data or on up- or down-stream monitoring information. Although EPA guidance allows use of best professional judgement in assessing river and stream segments upstream or downstream of a sampling location, the process followed needs to be examined and fine-tuned to ensure consistent assessments.

With this new geographical picture of unassessed and evaluated waters, the OWR is able to review the spatial extent of monitoring needs with respect to 303(d) and TMDL listed waters, and baseline monitoring statewide. It is anticipated that several types of monitoring designs including the traditional targeted monitoring and probability-based designs, will be employed by OWR to address the data gaps. The OWR feels it is important to maintain a baseline level of data collected statewide and therefore, the baseline monitoring program will be continued. The OWR has begun to assess the expansion of this baseline program to collect biological and chemical data at some of the unassessed and evaluated waters as sites are defined through this comprehensive assessment process. This type of targeted monitoring will also be evaluated for use in addressing the monitoring needs of the 303(d) and TMDL listed waters. As identified in the state's 1998 303(d) list, there are several waterbodies for which ambient dissolved metals data is needed to compare to the recently adopted dissolved metals criteria to determine the accurate status of the waterbody. Furthermore, there are several waterbodies on the 303(d) list whose assessments are based on evaluated data. A targeted monitoring program has been initiated at some of these sites to collect actual data, including dissolved metals data, with which to determine a more accurate status of these waters.

The use of a probability-based monitoring program is currently being investigated to define sampling locations for a summer 2000 biological and chemical monitoring effort on wadable streams. Fifty sites, located around the state, are being randomly selected to conduct EPA's Rapid Bioassessment Protocol IV, collect habitat information and water chemistry. It is anticipated that the data collected under this randomly designed will move the Department forward toward the comprehensive monitoring goals for rivers.

Lake monitoring within Rhode Island is conducted solely by URI's Watershed Watch Volunteer monitoring program and it is for this reason a large portion of Rhode Island's lake acres are considered assessed. Although DEM/OWR has supported this monitoring organization in the past, with the elimination of Federal Clean Lakes funding, DEM in recent past years has not expended any funds to support lake data collection. Re-establishment of financial support to the Watershed Watch program began in 1999 and a long term agreement with URI to continue this work is under development. An attempt to monitor lakes 20 acres and greater is now part of OWR's Monitoring Strategy for lakes. The agreement with URI calls for the additional monitoring of 5-10 lakes per year.

Due to the shellfishing resource, DEM/OWR collects an extensive amount of bacteriological data from the bay and coastal ponds. A gap in this data exists where there are permanent shellfish closures. In the upper bay a recent joint initiative by OWR and the Narragansett Bay Commission has been undertaken to address this gap in order to provide better information to the decision-making process on CSOs. Through the Narragansett Bay Estuarine Program a significant amount of water quality data on the Bay was generated. However, this effort was not followed up by a continuous monitoring program for Narragansett Bay and much of the data is now at least 10 years old. DEM/OWR has concerns about dissolved oxygen and impacts of nutrients in coastal waters and has implemented monitoring toward TMDL development for several sites. During 1999, a network of buoys was deployed to collect various water quality data in the Bay on a more continuous basis. Under the Coastal 2000 EPA initiative, 50 sites within Narragansett Bay are being randomly selected for a monitoring program scheduled for the summer of 2000. Water and sediment chemistry will be collected at the 50 sites. In addition, fish tissue sampling in areas of close proximity to these stations, will be conducted. It is anticipated that data collected under this randomly designed effort will assist the Department in attaining the comprehensive monitoring goal for estuarine waters.

Unlike other northeast states, Rhode Island has not supported a routine surveillance program for fish tissue analyses. In the spring of 1997, RI initiated a small monitoring program to measure mercury levels in fish. This monitoring has been limited since its initiation. Only a small number of waterbodies and fish have been tested for contamination. Currently, EPA, RI Department of Health and RIDEM are in the planning phase to develop an outline of a fish tissue monitoring program for the state. Finalization of the outline will produce a program that could be subject to future implementation if resources are secured.

While DEM/OWR will devote additional resources to baseline data collection, limitations on financial resources will require a prioritization of which additional projects/actions are undertaken and within what timeframe. It is expected that the schedule of implementation of monitoring will be influenced by the 303(d) list. Improvements in data management and data manipulation will continue to produce enhanced water quality assessments and the establishment of assessment and water quality mapping capabilities thus setting the framework for the state's Comprehensive Monitoring and Assessment Plan.